

## Contents

### Letters to the Editor

Deuterated C <sub>3</sub> H <sub>2</sub> as a clue to deuterium chemistry <i>Gerin, M., Wootten, H.A., Combes, F., Boulanger, F., Peters III, W.L., Kuiper, T.B.H., Encrénaz, P.J., Bogey, M.</i>	L1
Detection of features in the large-scale galaxy distribution from wide-angle samples of objective-prism spectra <i>Parker, Q.A., Beard, S.M., MacGillivray, H.T.</i>	L5
Far-UV variability of θ Cr B in 1985–86: a progression toward higher velocities <i>Doazan, V., Rusconi, L., Sedmak, G., Thomas, R.N.</i>	L8
Very cold IRAS objects and pre-planetary nebulae: CO observations <i>Likkel, L., Omont, A., Morris, M., Forveille, T.</i>	L11
Observations of magnetic hydrogen lines in the white dwarf GD 229 <i>Östreicher, R., Seifert, W., Ruder, H., Wunner, G.</i>	L15
<b>Cosmology</b>	
Photinos and primordial nucleosynthesis <i>Salati, P., Delbourg-Salvador, P., Audouze, J.</i>	1
<b>Extragalactic astronomy</b>	
EVN and MERLIN observations of five superluminal radio sources <i>Pilbratt, G., Booth, R.S., Porcas, R.W.</i>	12
Chemical and photometric properties of a galactic wind model for elliptical galaxies <i>Arimoto, N., Yoshii, Y.</i>	23
Cluster population incompleteness bias and distances from the Tully-Fisher relation: theory and numerical examples <i>Teerikorpi, P.</i>	39
Mapping of a molecular complex in a northern spiral arm of M 31 <i>Casoli, F., Combes, F., Stark, A.A.</i>	43
Photometric and spectroscopic investigation of three close companions of M 87 <i>Prugniel, P., Nieto, J.-L., Simien, F.</i>	49
The radial distribution of surface brightness in galactic disks <i>van der Kruit, P.C.</i>	59

### Imaging of the ionized gas and stars in emission line galaxies

<i>Durret, F., Bergeron, J.</i>	219
High resolution <sup>12</sup> CO observations of the central parts of the interacting galaxy NGC 3628 <i>Boissé, P., Casoli, F., Combes, F.</i>	229
Electron-positron jets from gamma-ray beams <i>Lovelace, R.V.E.</i>	237

### Galactic structure and dynamics

Complex instability around the rotation axis of stellar systems. I. Galactic potentials <i>Martinet, L., Pfenniger, D.</i>	81
---	----

### Stellar clusters and associations

(RN) The stellar association LH 39 in the Large Magellanic cloud and its Wolf-Rayet star <i>Schild, H.</i>	405
---	-----

### Formation, structure and evolution of stars

Temporal variability of the massive X-ray binary 4U 1700-37 <i>Doll, H., Brinkmann, W.</i>	86
Disappearance of periodic X-ray minima in AM Her <i>Priedhorsky, W., Marshall, F.J., Hearn, D.R.</i>	95
Relation between mass and central temperature in supermassive stars <i>Mitalas, R., Manuel, P.W.</i>	244
Changes of surface chemistry for standard massive star evolution: Cartography in the HR diagram <i>Maeder, A.</i>	247
H <sub>2</sub> O maser emission from stars in the IRAS point-source catalog <i>Zuckerman, B., Lo, K.Y.</i>	263
CO observations of IRAS Circular No. 9 sources 19520+2759 and 01133+6434: regions of star formation <i>Arquilla, R., Kwok, S.</i>	271
Neutron star spin evolution in wide low-mass X-ray binaries <i>de Kool, M., van Paradijs, J.</i>	279

**Stellar atmospheres**

Revised mass-loss rates for the nuclei of the planetary nebulae NGC 6210, NGC 6826 and NGC 6543: the first order moment $W_1$ of subordinate line profiles	101
Hutsemékers, D., Surdej, J.	
The classification of the shapes of stellar chromospheric emission lines	284
Gurzadyan, G.A.	
Radiation driven winds of hot luminous stars. II. Wind models for O-stars in the Magellanic Clouds	293
Kudritzki, R.P., Pauldrach, A., Puls, J.	
High-resolution emission-line spectroscopy of Be stars. II. Fe II and other weak emission lines	299
Hanuschik, R.W.	
Analysis of the Mg II resonance lines in the spectrum of Sirius	315
Freire Ferrero, R., Gouttebroze, P., Talavera, A.	

**Diffuse matter in space (including HII regions and planetary nebulae)**

IRAS measurements of H II regions	108
Antonopoulou, E., Pottasch, S.R.	
Radiative transfer in a spherical dust cloud. I. Exact results for isotropic scattering	115
van de Hulst, H.C.	
IR reflection nebulae near molecular outflow sources	124
Lenzen, R.	
Correlation of broad and narrow diffuse band features: evidence of molecular carriers	131
Chlewicki, G., de Groot, M.S., van der Zwart, G.P., Greenberg, J.M., Alvarez, P.P., Mampaso, A.	
Area spectroscopy of the core of 30 Doradus	137
Clayton, C.A.	
Observations of extended planetary nebulae. I. NGC 7293: the Helix Nebula	145
Leene, A., Pottasch, S.R.	
(RN) Cloud temperatures from ammonia observations	209
Kuiper, T.B.H.	
The Beta Pictoris circumstellar disk. IV. Redshifted UV lines	289
Lagrange, A.M., Ferlet, R., Vidal-Madjar, A.	
Clumps in IC 348: temperature and density profiles of dense cores	324
Bachiller, R., Guilloteau, S., Kahane, C.	
Molecular line observations of IC 443. The interaction of a molecular cloud and an interstellar shock	337
White, G.J., Rainey, R., Hayashi, S.S., Kaifu, N.	
A search for CH abundance variations towards L 134	347
Jacq, T., Baudry, A., Despois, D., Gérard, E., Johansson, L.E.B.	
A multilevel study of ammonia in star-forming regions. I. Maser and thermal emission toward W 51 IRS2	352
Mauersberger, R., Henkel, C., Wilson, T.L.	

**The Sun**

Interpretation of shifts and asymmetries of Fe I lines in solar facular areas	155
Cavallini, F., Ceppatelli, G., Righini, A.	
5-min oscillations in the wings and bisectors of solar photospheric Fe I lines	161
Cavallini, F., Ceppatelli, G., Righini, A., Alamanni, N.	
Diagnostics of solar magnetic fluxtubes with the infrared line Fe I $\lambda$ 15648.54 Å	167
Stenflo, J.O., Solanki, S.K., Harvey, J.W.	
Determination of temperature conditions of solar energetic particle emission regions	361
Vahia, M.N.	
The speeds of electrons that excite solar radio bursts of type III	366
Dulk, G.A., Steinberg, J.L., Hoang, S., Goldman, M.V.	
A non-LTE study of the solar emission lines near 12 microns	375
Lemke, M., Holweger, H.	
(RN) Identification of forbidden lines from the N I-like ions Si VIII, S X and Ar XII	408
Doyle, J.G.	

**The solar system**

Polarimetry of visible and near-UV molecular bands: comets P/Halley and Hartley-Good	180
Le Borgne, J.F., Leroy, J.L., Arnaud, J.	
Numerical experiments relative to primordial rotations of planets	183
Gaudon, P., Cazenave, A.	
Results of interferometric observations of the F-corona radial velocity field between 3 and 7 solar radii	383
Shcheglov, P.V., Shestakova, L.I., Ajmanov, A.K.	
A numerical simulation of planetary rings. I. Binary encounters	389
Petit, J.-M., Hénon, M.	

**Celestial mechanics and astrometry**

Statistical detection of disturbing effects in observations. An example: visual observations with astrolabes (Text in French)	191
Bougeard, M.	
(RN) Note on Li's expression of corrections for the deflection of light in the case of astrolabe observations	212
Manabe, S.	
<i>Erratum: Sur la position "optique" et "radio" du système <math>\alpha</math> Scorpis (Optical and radio positions of <math>\alpha</math> Scorpis)</i>	
Clauzet, L.B.F., Débarbat, S., Chollet, F.	415

**Physical and chemical processes**

(RN) Improved radiative transition probabilities for O II forbidden lines	
Zeippen, C.J.	410

**Instruments, data processing, and computational methods**

High dispersion spectroscopy of point sources and extended objects with an echelle/CCD spectrograph

- McKeith, C.D., Bates, B., Catney, M., Barnett, E., Jorden, P.R., van Breda, I.G.* 204

**Abstracts of articles which have been published in A & A Suppl. Ser. 67, No. 2**

Santiago declination catalogue. A declination catalogue of 412 FK4 stars (equinox 1950.0)

- Carrasco, G., Loyola, P.* 214

New double stars (20th series) discovered at Nice (Text in French)

- Couteau, P.* 214

The optical variability of seven BL Lacertae objects

- Xie Guang-Zhong, Li Kai-Hua, Bao Men-Xien, Hau Peng-Jiu, Zhou Yuan, Liu Xin-De, Deng Li-Wu* 214

Spectral classification of bright stars in LMC clusters

- Xiradaki, E., Kontizas, M., Kontizas, E.* 215

New measurements of radial velocities in clusters of galaxies

- Proust, D., Talavera, A., Salvador Sole, E., Mazure, A., Capelato, H.V.* 215

Multifrequency observations of low frequency variable sources: a statistical analysis

- Padrielli, L., Aller, M.F., Aller, H.D., Fanti, C., Fanti, R., Ficarra, A., Gregorini, L., Mantovani, F., Nicolson, G.* 215

A photometric study of DM Delphini

- Güdür, N., Sezer, C., Gülmén, Ö.* 216

Rotational properties and light curves of the minor planets 94, 107, 197, 201, 360, 451, 511 and 702

- Di Martino, M., Zappala', V., De Campos, J.A., Debehogne, H., Lagerkvist, C.-I.* 216

A photoelectric *UBV* sequence in SA 184

- Ardeberg, A., Lindgren, H.* 216

Further observations of PW Vulpeculae

- Andrillat, Y., Houziaux, L.* 217

Investigation of a complete sample of flat spectrum radio sources from the S5 survey. II. Results

- Eckart, A., Witzel, A., Biermann, P., Johnston, K.J., Simon, R., Schalinski, C., Kühr, H.* 217

Computed spectral line variations of oblique non-radial pulsators

- Baade, D., Weiss, W.W.* 217

*UBVRI* photoelectric photometry of nearby stars. II.

- Rosselló, G., Blanch, R., Figueras, F., Jordi, C., Núñez, J., Paredes, J.M., Sala, F., Torra, J.* 217

Photoelectric radial velocities of eclipsing binaries. III. Orbital elements of AN Cam (Text in French)

- Imbert, M.* 218

An objective-prism survey of emission-line objects in M 33 and IC 1613

- Lequeux, J., Meyssonner, N., Azzopardi, M.* 218

M 62: a link between M 13-like and Oosterhoff I globular clusters

- Caloi, V., Castellani, V., Piccolo, F.* 416

Infrared properties of CP stars

- Kroll, R., Schneider, H., Catalano, F.A., Voigt, H.H.* 416

Spectral energy distributions of Be stars. I. Measurements of 26 southern and equatorial stars

- Kaiser, D.* 416

Fe II oscillator strengths

- Kroll, S., Kock, M.* 417

The Hydra I cluster of galaxies. III. New redshifts

- Richter, O.-G.* 417

RGU-three colour photometry in the anticentre-intermediate latitude field NGC 2420

- Fenkart, R., Topaktaş, L., Boydağ, S., Kandemir, G.* 417

Redshifts for galaxies in southern clusters

- Richter, O.-G.* 418

VLA observations of B2 quasars, II. Compact sources

- Rogora, A., Padrielli, L., de Ruiter, H.R.* 418

The final COS-B database: in-flight calibration of sensitivity and instrumental background behaviour

- Strong, A.W., Bloemen, J.B.G.M., Lebrun, F., Hermans, W., Mayer-Hasselwander, H.A., Buccieri, R.* 418

Results of observations made in Paris with the astrolabe (Text in French)

- Chollet, F., Débarbat, S., Golbasi, O., Hascoët, J.-C., Lam, S.K., Lehman, M., Mangombi dei Ilonga, J., Texier, P.* 419

Micrometric measurements of triple systems north of +70° declination (Text in German)

- Schmeidler, F.* 419

A photometric study of the bright cloud B in Sagittarius. V. 185 new proper motion stars

- Terzan, A., Turati, C., Oumann, C.* 419

CCD photometry in globular clusters. II. NGC 7492

- Buonanno, R., Corsi, C.E., Ferraro, I., Fusi Pecci, F.* 419

A catalogue of early-type galaxies with emission lines

- Bettoni, D., Buson, L.M.* 420

Optical region elemental abundance analyses of B and A stars. VI. The normal stars HR 6559 (A7 IV) and η Leporis (F0 IV)

- Adelman, S.J.* 420

New photoelectric light curves and elements of SW Lacertae

- Niarchos, P.G.* 420